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THE TRANSIT OF MERCURY OF NOVEMBER 10, 1973

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WALTER A. FEIBELMAN

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GREENBELT, MARYLAND



**For information concerning availability
of this document contact:**

**Technical Information Division, Code 250
Goddard Space Flight Center
Greenbelt, Maryland 20771**

(Telephone 301-982-4488)

THE TRANSIT OF MERCURY OF NOVEMBER 10, 1973

by

Walter A. Feibelman

Astronomy Systems Branch
Laboratory for Optical Astronomy
Goddard Space Flight Center
National Aeronautics and Space Administration

The transit of Mercury of November 10, 1973 was observed from my residence at Silver Spring, Maryland (76°58' W, 39°01' N) for the period 6:48:00 EST, near sunrise, to 8:17:18 (contact IV). A total of 24 frames of 35mm Pan X film were taken through a Questar telescope equipped with a sun filter of 40mm aperture. The diameter of the solar image is 13mm on the film.

At sunrise a thin layer of clouds was hugging the horizon and the seeing was not too good, probably due to a cold front that had moved through the area at night. After a few minutes, however, when the sun had risen above the clouds, the seeing improved somewhat. The entire sky remained free of clouds and Mercury was easily picked up visually on the perfectly spotless sun.

A series of 8 prints, enlarged 8 X from the original, are shown in Fig. 1, taken at the times tabulated below.

Frame Number	E.S.T.	Exposure
6	7:30:03	1/125 sec
11	7:59:33	1/60
13	8:05:03	1/125
14	8:10:03	1/60
15	8:13:03	1/60
16	8:15:03	1/125
17	8:15:33	1/125
18	8:16:03	1/125

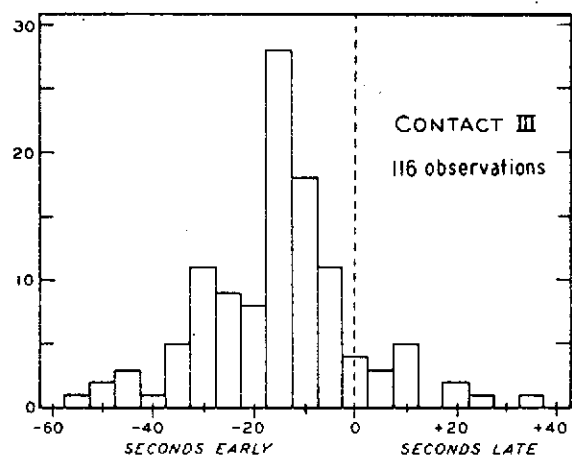
The Questar was used as an altazimuth mounted instrument and therefore solar rotation becomes evident on widely spaced

exposures. Contact III was believed to have occurred at 8:16:03 (Frame No. 18) and Contact IV at 8:17:18 (Frame No. 23, not shown), but some uncertainty exists due to the seeing conditions. Frames 19 to 24 were taken in 15 second intervals and of these 19 to 22 show a mere dent in the solar limb.

A sweep second watch was checked against WWV time signals afterwards and a correction of 3 seconds had to be added to the data, hence, the recurrence of the number 3 in the last column.

In the January 1974 issue of Sky and Telescope a summary of observations of the transit of Mercury appeared. The graph shown below is taken from that issue and depicts a histogram of Contact III timings, based on 116 separate observations. It shows that the most probable time of third contact occurred 16 seconds earlier than predicted. It is interesting to note that the timing of Contact III for the photographic result reported in this write-up is in exact agreement with the 116 visual sightings. Since it is the only photographic record, it adds considerable weight to the distribution peak at -16 seconds.

In a subsequent article in the March issue of the same magazine, 19 additional observations of Contact III are reported. These do not, however, change the value of -16 sec for the residual.



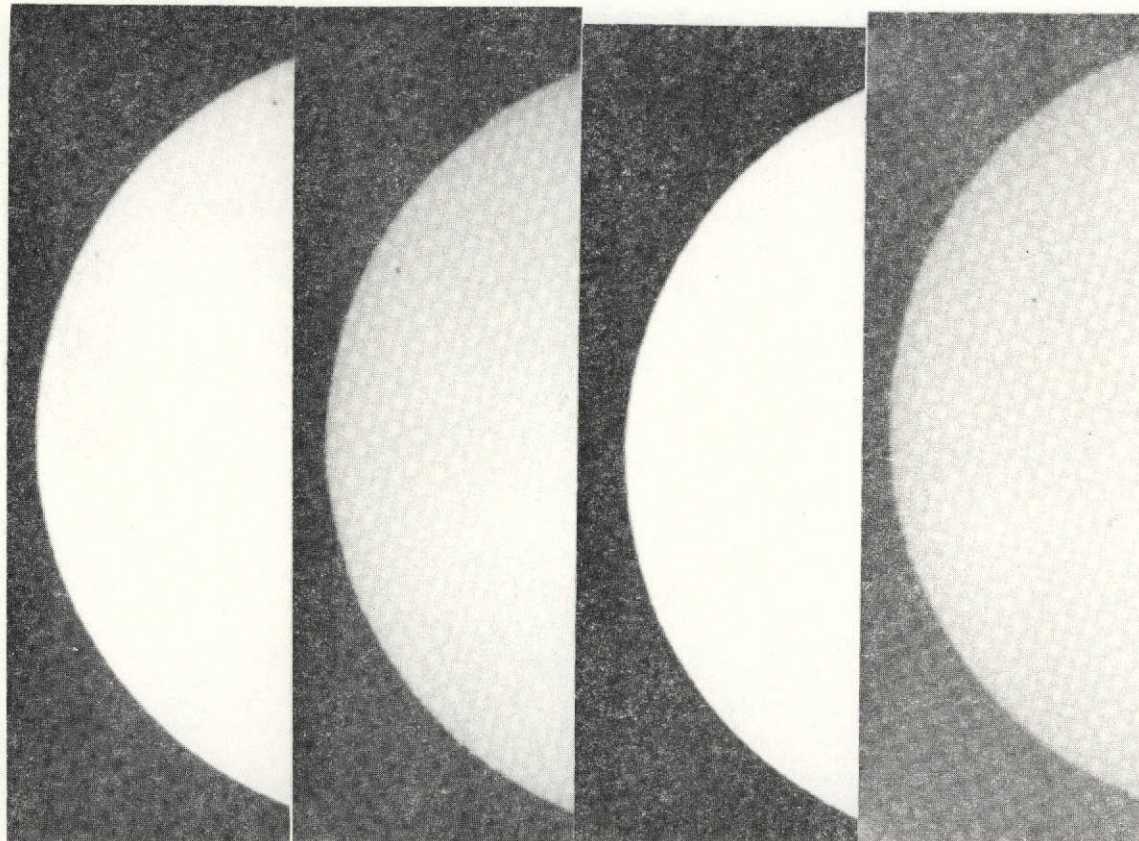
Plot of 116 observations of Contact III, taken from
SKY and TELESCOPE, Jan. 1974 issue

Frame # 6

11

13

14



8x

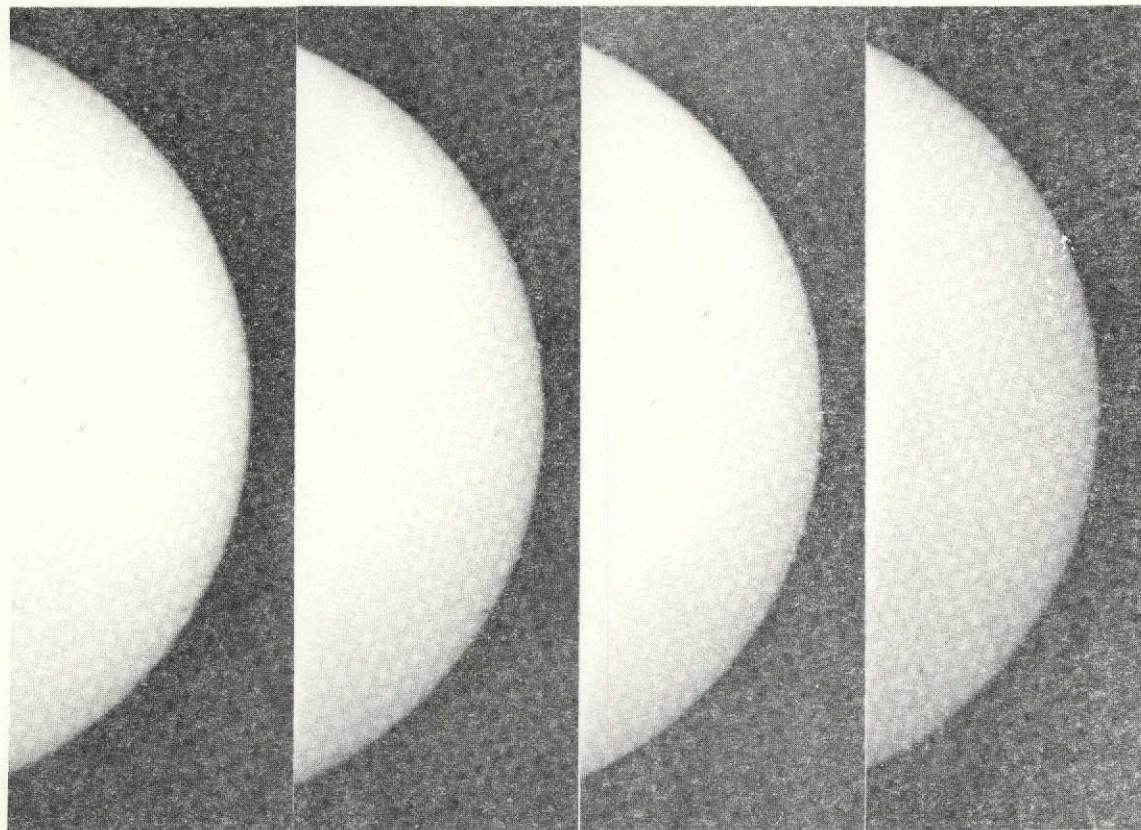
-4-

#15

#16

#17

#18



-5-

8X